

Applicant : Shackleford
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In the Figures:

Please replace Fig. 1 as filed with replacement Fig. 1 attached herein.

Please replace Fig. 2 as filed with replacement Fig. 2 attached herein.

Please replace Fig. 7 as filed with replacement Fig. 7 attached herein.

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REMARKS

Figures: The Examiner objected to various aspects of Figures 1, 2, 3, 5 and 7. Applicant modified Fig. 1, 2 and 7 to bring the figures in conformance with the specification. However, other changes to the figures suggested appear not to be in violation of the drawing requirements and have been omitted to ensure no new matter is introduced. Applicant respectfully submits that the Examiner accept the drawings as submitted as long as they comply with the drawing requirements. In the event the figures do not comply with one or more drawing requirements, the Application would appreciate if the Examiner would point out the inconsistencies with the drawing requirements in particularity.

Specification: The Examiner made numerous objections to the Specification ranging from page 2 through page 17. In total, there were 20 suggested changes to the Specification. Applicant carefully reviewed these changes and carefully considered the Examiner's suggested changes. In many cases, the suggested changes appear to potentially be introducing new matter. Consequently, to preserve the filing data and other rights, the Applicant has chosen not to make the suggested changes. It remains unclear on what basis the Examiner is making these 20 or so suggested changes but if in fact there is some violation of one or more rules, Applicant would be quite amenable to making the appropriate changes. Unfortunately, the Examiner has not pointed out with particularity one or more different rules that have not been followed.

Abstract: The Examiner objected to the abstract for having a run on sentence. Applicant has substantially adopted the Examiner's suggested modification to the abstract as no new matter has been introduced. Please replace the abstract as filed with the suggested abstract.

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Claims: The Examiner's objection to claim 8 due to an informality has been addressed herein above and this objection should be withdrawn.

In the Office Action mailed August 1, 2005 the Examiner rejected claims 1-16 under 35 USC 101. According to the Examiner, this rejection is supported under 35 USC 101 because "the language of the claims (e.g. "optimally solves", "adjust") raises a question as to whether the claims are directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result in a practical application producing a concrete, useful, and tangible result"

While the examiner may question the language of the claims as suggested in the Office Action, this is not test under 35 USC 101. Instead, several tests must be carefully and rigorously applied as set forth in several relevant and recent cases. Unfortunately, the Examiner's cursory rejection of claims 1-16 makes no attempt to analyze these claims in that context and fail to establish even a prima facie case.

In *State Street Bank & Trust Co., v. Signature Financial Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1998), the Federal Circuit articulated the following test for patentability under this section developed from *In re Alappat*, 33 F.3d 1526; 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994), and *Arrhythmia Research Technology, Inc., v. Corazonix Corp.*, 958 F.2d 1053; 22 U.S.P.Q.2d (BNA) 1033 (Fed. Cir. 1992). A claim defines subject matter eligible for patent protection if the claim contains a practical application or, equivalently, if the invention defined by the claim produces "a useful, concrete and tangible result."

1. A result is useful if it lies within the technological arts.

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Although the court in *State Street* did not further define the term “useful,” courts have previously interpreted “useful” as meaning “in the technological arts. See *Evans v. Eaton*, 16 U.S. 454; 4 L. Ed. 433; 3 Wheat. 454 (1818) (explaining that “a patent may be for a new and useful art; but it must be practical”); *In re Toma*, 575 F.2d 872 (C.C.P.A. 1978) (holding that a “method for enabling a computer to translate natural languages is in the technological arts, *i.e.*, it is a method of operating a machine”)

In the instant case, a graphical user interface (GUI) assists in solving problems that can be complex and difficult to otherwise analyze. This GUI is useful as it presents complex data produced using genetic algorithms in a visual representation that can be more readily understood and analyzed. Parameters and other settings are also provided visually to show the interaction between the parameters and the visual results that result when the parameters are modified. Clearly, the GUI is both useful and in the technological arts as it deals with solving complex problems through an “evolutionary” process.

**2. A result is concrete or tangible, and thus not abstract, if it
lies within the physical realm.**

The terms “tangible” and “concrete” come from the *Alappat* case. In that case, the Federal Circuit explained that “abstract ideas” were “disembodied,” or divorced from physical manifestations. Patentable subject matter, on the other hand, was tangible and concrete.

Given the foregoing, the proper inquiry in dealing with the so called mathematical subject matter exception to § 101 alleged herein is to see whether the claimed subject matter as a whole is a disembodied mathematical concept, whether categorized as a mathematical formula, mathematical equation, mathematical

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algorithm, or the like, which in essence represents nothing more than a "law of nature," "natural phenomenon," or "abstract idea."

Claims to a specific machine that lies in the physical realm, however, are not abstract, as the

Federal Circuit explained:

Although many, or arguably even all, of the means elements recited in claim 15 represent circuitry elements that perform mathematical calculations, which is essentially true of all digital electrical circuits, the claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means. n23 This is not a disembodied mathematical concept which may be characterized as an "abstract idea," but rather a specific machine to produce a useful, concrete, and tangible result.

As previously described, claim 1 is a graphical user interface or GUI used on computers, laptops and other computer-based devices. There is no possibility that a GUI can be construed as merely an "abstract idea that is not tied to a technological art." On the contrary, the GUI and its special design and configuration described herein above is used to directly access computing and other resources through a more usable graphical interface. This is not an "abstract" idea as the GUI runs on a computer and allows users to access the computer and/or other type machines.

Accordingly, Applicant respectfully requests the Examiner to withdraw this rejection as Claims 1-16 have sufficient usefulness in the technological arts as required under 35 USC 101.

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Unfortunately, there is no evidence that these claims are to be considered "an abstract condition" and without the aforementioned necessary qualities.

Additionally, the Examiner rejected Claims 1-16 under 35 USC 103(a) over "A Genetic Algorithm Programming Environment: Splicer", by Bayer et al. (Bayer) in view of the Examiner's Official Notice and Rosenberg (US Patent 6,147,674).

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)

Bayer concerns a general environment for running genetic algorithm (GA) problems. It includes a GA kernel, fitness module, representation library and user interface (page 141, figure 4 of Bayer). The fitness module holds various fitness functions and the GA kernel runs these different fitness modules by way of a user interface. With regards to the user interface, Bayer only provides simple text entry areas for entering values like population size, crossover type and

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probabilities and mutation probabilities. (page 142, Figure 5 of Bayer). These values are well known to those interested in GA and do not provide anything new.

Unfortunately, Bayer does not suggest or teach “an evolution parameter field in a second portion of said graphical user interface adjustable to assist in identifying the optimal solution to the complex problem represented using the genetic algorithm, said evolution parameter field having a first value, said evolution parameter field comprising at least one variable related to the evolution of said genetic algorithm towards the optimal solution” or “modification interface for modifying the evolution of said solution for said genetic algorithm in real time based upon an adjustment of said evolution parameter field from said first value to a second value” as recited in claim 1. This is not suprising as Bayer is only concerned with receiving values and then performing a run to determine the results. Bayer does not teach or even suggest performing the evaluation in real-time as certain GA parameters are changed in Bayer one at a time. There is no way for Bayer to change parameters in real-time let alone display a representation of the parameters visually. In fact, the Examiner also admits that Bayer does not at least teach or even suggest “a graphical user interface displaying in a first portion thereof an evolution of a solution for a genetic algorithm that represents potential solutions to complex problems as one or more chromosomes” as recited in Claim 1.

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It is also not sufficient for the Examiner to take Official Notice of each and every element not taught or suggested in Bayer or other references. Instead, the Examiner may only take official notice of facts outside of the record which are capable of instant and unquestionable demonstration as being "well known" in the art. In re Ahlert , 424 F.2d 1088, 165 USPQ 418, 420 (CCPA 1970) (Board properly took judicial notice that "it is common practice to postheat a weld after the welding operation is completed" and that "it is old to adjust the intensity of a flame in accordance with the heat requirements."). See also In re Seifreid , 407 F.2d 897, 160 USPQ 804 (CCPA 1969) (Examiner's statement that polyethylene terephthalate films are commonly known to be shrinkable is a statement of common knowledge in the art, supported by the references of record.). There is no supported statement or assertion by the Examiner the limitations recited in claim 1 are well known in the art such that they are "capable of instant and unquestionable demonstration." Unless the Examiner can provide something to show that the recitations in claim 1 are notoriously well known then it is requested that the rejection be retracted on this basis alone.

Further, Applicant respectfully submits that even Rosenberg does not stand for the limitations in claim 1 being well-known in the art. Instead, Rosenberg deals with force feedback systems that model a relatively well-understood area of physics involving springs and movement of small masses (Col. 4, lines 1-5 of Rosenberg). These descriptions in Rosenberg have little or

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nothing to do with modifying genetic algorithm parameters to find an optimal solution. No where in Rosenberg does it appear that solving the equations associated with masses and springs is sufficiently complex to require genetic algorithm optimizations. On this additional basis, the Applicant respectfully submits that the Examiner has no basis for the conclusion and should also withdraw the rejection.

At the very best, it appears the Examiner's Official Notice merely restates Claim 1. The Examiner's rejection is impermissibly based upon Claim 1 itself. Applicant would appreciate in general of the Examiner could state independent authority for indicating the limitations of Claim 1 are well-known or withdraw the rejection.

Contrary to the Examiner's assertion, Rosenberg makes no discussion of genetic algorithms or having "an evolution parameter field in a second portion of said graphic user interface adjustable to assist in identifying the optimal solution to the complex problem represented using the genetic algorithm, said evolution parameter field having a first value, said evolution parameter field comprising at least one variable related to the evolution of said genetic algorithm towards the optimal solution" as recited in claim 1.

There is also no motivation to combine Bayer with Rosenberg and further combine with the Examiner's Official Notice. Applicant's appreciate the Examiner's opinion that the Claimed invention would be desirable with force feedback systems but this is not the basis for a

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motivation to combined. If this were the case, the Examiner could essentially invalidate every claim by combining old elements and indicating a desirability to combine. ("Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be 'an illogical and inappropriate process by which to determine patentability.'" *Sensonicx, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 U.S.P.Q.2D (BNA) 1551, 1554 (Fed. Cir. 1996). *Id.* at 1357

Rather the test requires finding a suggestion or desirability in the cited art as a whole as motivation to combine. ("Therefore, 'when determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" See *In re Beattie*, 974 F.2d 1309, 1311-12, 24 U.S.P.Q.2D (BNA) 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 U.S.P.Q. (BNA) 481, 488 (Fed. Cir. 1984))." *Id.* at 1356.) Here, the Examiner does not appear to indicate precisely or generally where in Bayer or Rosenberg that a general

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motivation to combine exists. This is not surprising as Bayer deals with genetic algorithms and Rosenberg deals with simulating springs and masses. Other than the Examiner's opinion, no nexus between these two references appears to exist.

Even if Bayer were combined with Rosenberg, the result would not be that recited in claim 1. Bayer describes an environment for genetic algorithms and Rosenberg deals with a user interface for simulating springs and masses. It is not only unclear how to connect these two disparate topics and inventions without changing their individual operation. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Combining Bayer with Rosenberg may change the principle operation of Bayer as the information in Bayer would be displayed on a system dealing only with springs and masses. No accommodation for genetic algorithm parameters is described in Rosenberg so it is unclear in general how they could be combined.

For at least these reasons, independent claim 1 remains patentable over Bayer and Rosenberg. Independent claims 8 and 14 include at least some of the limitations in claim 1 and for at least these reasons also remains patentable over the cited art. Dependent claims 2-7 and 9-

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13, and 15-16 are independently patentable and in addition remain patentable due to their dependency on independent claims 1, 8 and 14 respectively.

Included above is an updated version of the claims including amendments made in the instant office action response.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Leland Wiesner, Applicants' Attorney at (650) 853-1113 so that such issues may be resolved as expeditiously as possible.

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For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



11/04/2005
Date

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Attachments: Replacement Fig. 1, 2, and 7